Dosing, durability of haemoglobin response and safety of iron isomaltoside in outpatients with gastrointestinal diseases

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Introduction

- Iron deficiency anaemia (IDA) commonly complicates gastrointestinal disease and impairs quality of life (QoL).
- Intravenous iron therapy is widely used in IDA when oral iron is poorly tolerated or ineffective
- Normalisation of haemoglobin improves QoL scores.
- We sought to define the dosing regimens of, durability of haemoglobin responses and the prevalence of adverse events to intravenous iron (III) isomaltoside (Monofer)

Methods

- Service evaluation of intravenous iron use in 505 outpatients (40% male) with gastrointestinal disease treated with 645 Monofer infusions between 2014 and 2017.
- Demographic, diagnosis, and treatment factors including dose of Monofer used and the number of patients treated with repeat infusions, recorded from the medical record.
- Anaemia was defined by WHO criteria (haemoglobin <130 g/L in men, 120 g/L in women).
- Iron deficiency was defined as transferrin saturation <18% and/or ferritin <30 µg/L (ferritin <100 µg/L if CRP >5 mg/L).
- We extracted laboratory results from the electronic record for baseline, 12 weeks and 52 weeks.
- We sought factors associated with treatment failure, defined as ongoing anaemia at 12 weeks, using logistic regression.

Results

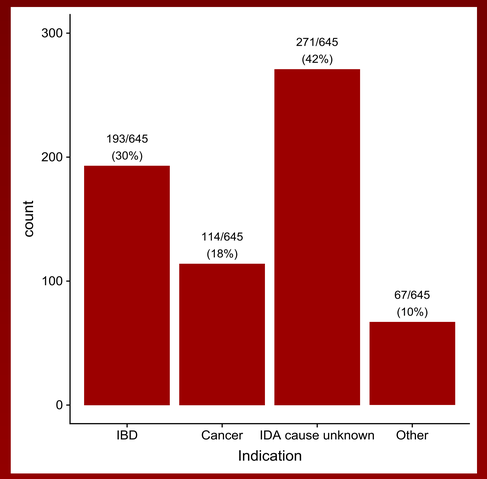

Figure 1: Indication for iron infusions

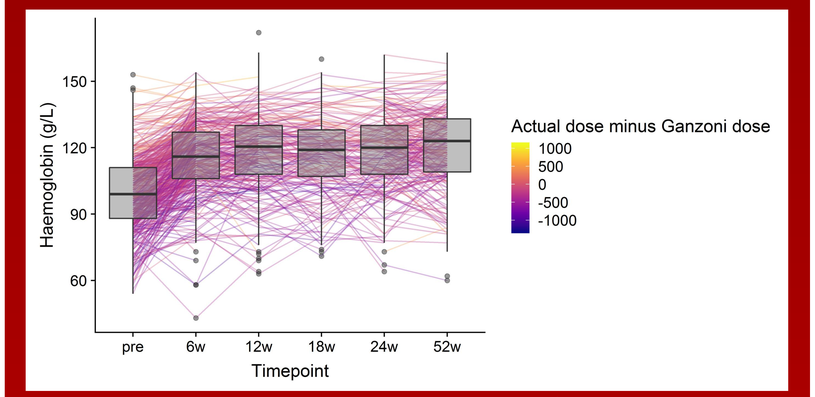

Figure 2: Haemoglobin change post iron infusion; boxes indicate medians/interquartile ranges

- Overall, 93% (568/613) were anaemic at baseline with median (IQR) haemoglobin of 100 g/L (IQR 88-112).
- 73% (473/645) had recent haematinics tested and 90% of those (423/473) had proven IDA.
- Inflammatory bowel disease was the most common indication, 30% (193/645) of infusions. (Figure 1)
- A variety of dosing regimens were used: 26% (165/645) received fixed dosing of 1 g, 25% (163/645) were dosed according to the Ganzoni formula, 14% (91/648) had the dose calculated by the Ganzoni formula but limited to a single 20 mg/kg infusion, 8% (54/645) were dosed by the simplified dosing table and 27% (172/648) other dosing strategies. 74% (476/645) infusions had follow-up haemoglobin measured 6 to 18 weeks post-infusion.
- The median change in haemoglobin between baseline and 6-18 weeks was 18 g/L (IQR 8-29). 42% (185/438) of previously anaemic patients had normalised their haemoglobin by this time.
- Factors associated with failure to normalise haemoglobin on multivariable analysis were male sex (odds ratio (OR) 2.7 [95%CI 1.7-4.3]), higher comorbidity (Charlson score ≥ 4) (OR 1.9 [95%CI 2.6-5.5]) and under-dosing versus Ganzoni-calculated dose (OR 2.3 per gram underdosed [95%CI 1.0-5.2]). Only, 31% (44/143) patients whose haemoglobin normalised at week 12 had recurrent anaemia at 1 year.
- Haemoglobins over time with an indication of over-and under-dosing are displayed in figure 2.
- Adverse events were rare: only two patients had a probable complement activation-related pseudo allergy that was mitigated by slowing infusions, and one an anaphylactic reaction.

Conclusions

- A wide-variety of dosing strategies are used in our trust.
- Treatment failure was associated with under-dosing , sex and comorbidity.
- Adverse events were rare.